

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF

Group Art Unit: 1712

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Examiner: R. Sellers

APPLICATION NO: not yet assigned

FILED: concurrently with this paper

FOR: DUST-FREE, EPOXY-CONTAINING  
STABILIZER GRANULES AND THE  
PREPARATION PROCESS

Commissioner for Patents  
Washington, D.C. 20231

**PRELIMINARY AMENDMENT**

Sir:

Applicants present this Preliminary Amendment in this divisional application for entry and consideration. An Office Action, Paper No. 17, dated March 13, 2001 was issued in the prosecution of the parent application, U.S. application No. 09/160,000, filed Sep. 24, 1998. The parent application is co-pending as of the date of this submission and no petition for an extension of time is required to make the parent co-pending.

**In the Specification**

Please amend the specification as follows:

Page 1, between lines 1 and 2 (after the title), add the following new paragraph:

--This application is a divisional of U.S. application No. 09/160,000, filed Sep. 24, 1998.--

**In the Claims**

Cancel claims 1-20 (all claims).

Please add the following new claims:

**21. (new)** Low-dust granules of plastics additives having a particle size distribution of between 1 mm and 6 mm as defined in accordance with ISO 3435 and a loose bulk density of greater than 500 g/l comprising

- a) a phenolic antioxidant, an organic phosphite or phosphonite, a phosphonate, a sterically hindered amine or a UV absorber, individually, or a mixture of these compounds and
- b) 10-90 % by weight of at least one bisphenol A diglycidyl ether,

which granules are prepared by a process which comprises heating

- a) a phenolic antioxidant, an organic phosphite or phosphonite, a phosphonate, a sterically hindered amine or a UV absorber, individually, or a mixture of these compounds, and
- b) at least one at least one bisphenol A diglycidyl ether which is solid at room temperature,

to an extent such that at least 80% by weight of the bisphenol A diglycidyl ether has melted, pressing the melt through a plate provided with dies or perforations, the die or perforation diameter being between 1 and 10 mm, and chopping the resulting strands in the plastic state to form granules,

wherein the temperature before the outlet die (at the die head) is between 60-160° C.

**22. (new)** Granules according to claim 21, which have a free flow in accordance with DIN 53492 of less than 15 s (tR15).

**23. (new)** Granules according to claim 21, which have a fine fraction as determined by the Heubach-test of not more than 0.1% by weight.

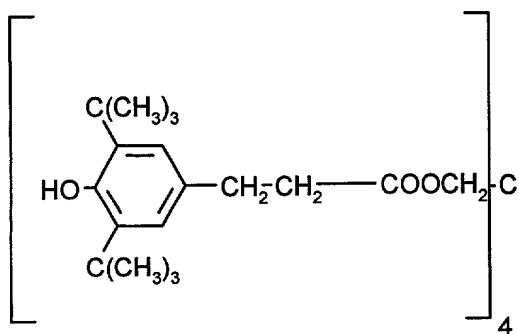
**24. (new)** Granules according to claim 21, which comprise further plastics additives from the group of the hydrotalcites, metal oxides, metal carbonates, metal soaps, antistats, antiblocking agents, flame retardants, thioesters, internal and external lubricants, processing aids and pigments.

**25. (new)** Granules according to claim 21, which consist of 30-80% by weight of epoxy compound, 5-25% by weight of an antioxidant of the sterically hindered phenol type, 5-25% by weight of a phosphite or phosphonite, 10-40% by weight of CaO and 1-5% by weight of calcium stearate.

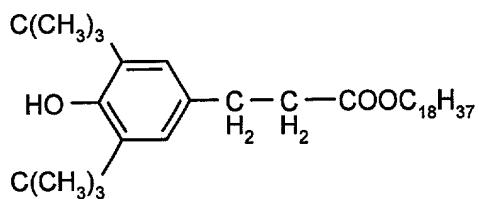
**26. (new)** Granules according to claim 21, which consist of 50-80% by weight of epoxy compound and of 50-20% by weight of a phosphonate.

**27. (new)** Granules according to claim 21, which comprise as phenolic antioxidant 3,5,3',5'-tetra-tert-butyl-4,4'-dihydroxydibenzyl ether, octadecyl 4-hydroxy-3,5-dimethylbenzylmercaptoacetate, tris(3,5-di-tert-butyl-4-hydroxybenzyl)-amine, bis(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)dithiophthalate, bis(3,5-di-tert-butyl-4-hydroxybenzyl) sulfide, isoctyl 3,5-di-tert-butyl-4-hydroxybenzylmercaptoacetate, 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl)-2,4,6-trimethylbenzene, 1,4-bis(3,5-di-tert-butyl-4-hydroxybenzyl)-2,3,5,6-tetramethylbenzene, 2,4,6-tris(3,5-di-tert-butyl-4-hydroxybenzyl)phenol; 2,4-bisoctylmercapto-6-(3,5-di-tert-butyl-4-hydroxyanilino)-1,3,5-triazine, 2-octylmercapto-4,6-bis(3,5-di-tert-butyl-4-hydroxyanilino)-1,3,5-triazine, 2-octylmercapto-4,6-bis(3,5-di-tert-butyl-4-hydroxyphenoxy)-1,3,5-triazine, 2,4,6-tris(3,5-di-tert-butyl-4-hydroxyphenoxy)-1,2,3-triazine, 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl) isocyanurate, 1,3,5-tris(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl) isocyanurate, 2,4,6-tris(3,5-di-tert-butyl-4-hydroxyphenylethyl)-1,3,5-triazine, 1,3,5-tris(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)hexahydro-1,3,5-triazine, 1,3,5-tris(3,5-dicyclohexyl-4-hydroxybenzyl) isocyanurate; 4-hydroxylauranilide, 4-hydroxystearanilide, octyl N-(3,5-di-tert-butyl-4-hydroxyphenyl)carbamate; or an ester of  $\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid with methanol, ethanol, octanol, octadecanol, 1,6-hexanediol, 1,9-nanediol, ethylene glycol, 1,2-propanediol, neopentyl glycol, thioglycolic acid, diethylene glycol, triethylene glycol, pentaerythritol, tris(hydroxyethyl) isocyanurate, N,N'-bis(hydroxyethyl)oxalamide, 3-thiaundecanol, 3-

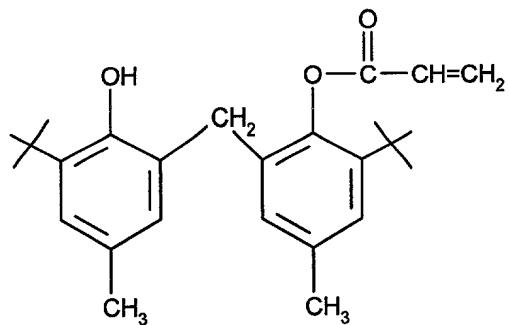
thiapentadecanol, trimethylhexanediol, trimethylopropane, 4-hydroxymethyl-1-phospha-2,6,7-trioxabicyclo[2.2.2]octane or



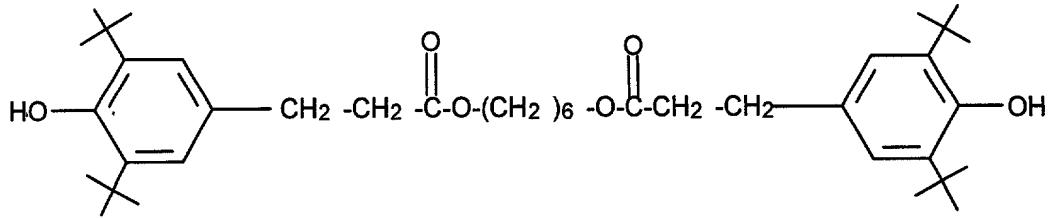
$\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl)propionic ester of pentaerythritol



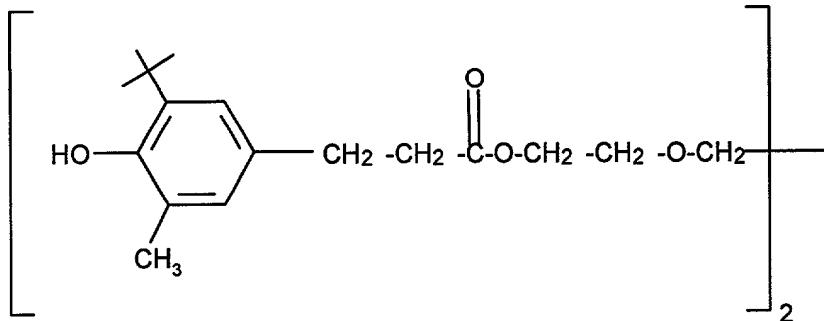
octadecyl  $\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl)propionate



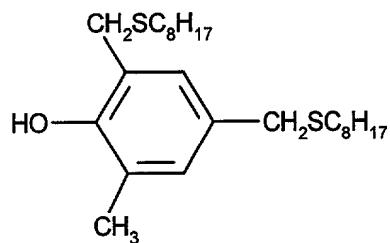
2-(1,1-dimethylethyl)-6-[[3-(1,1-dimethylethyl)-2-hydroxy-5-methylphenyl]methyl]-4-methylphenyl 2-propenoate;



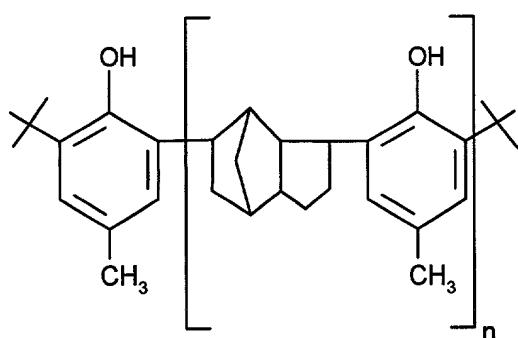
1,6-hexanediyI 3,5-bis(1,1-dimethylethyl)-4-hydroxyphenylpropanoate;



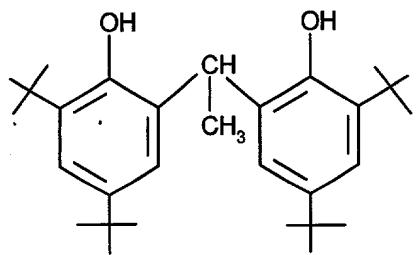
1,2-ethanediylbis(oxy-2,1-ethanediyl) 3-(1,1-dimethylethyl)-4-hydroxy-5-methyl-phenylpropanoate;



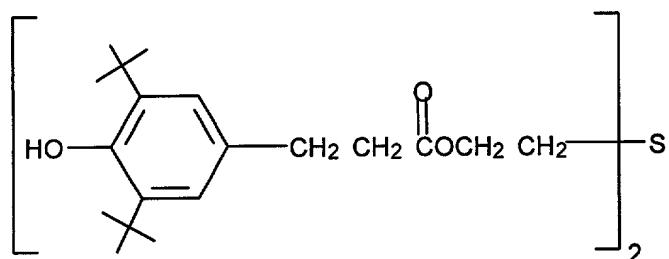
{2-methyl-4,6-bis[(octylthio)methyl]phenol};



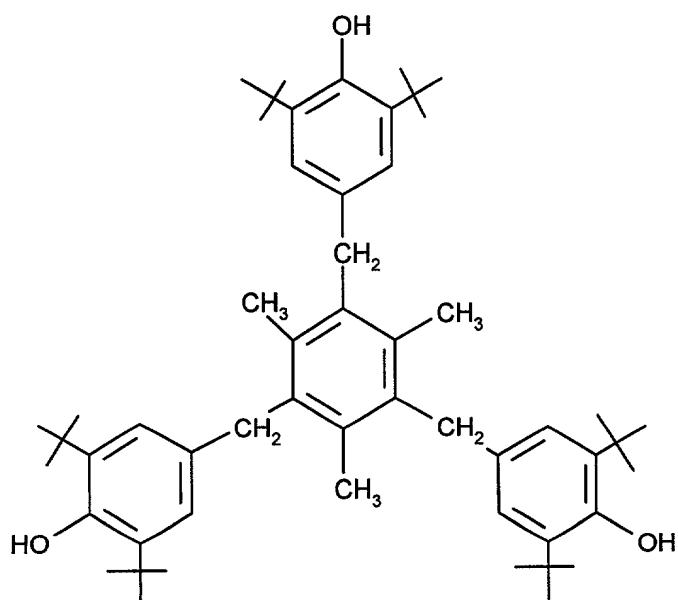
butylated reaction product of para-cresol and dicyclopentadiene (average molecular weight 600-700)



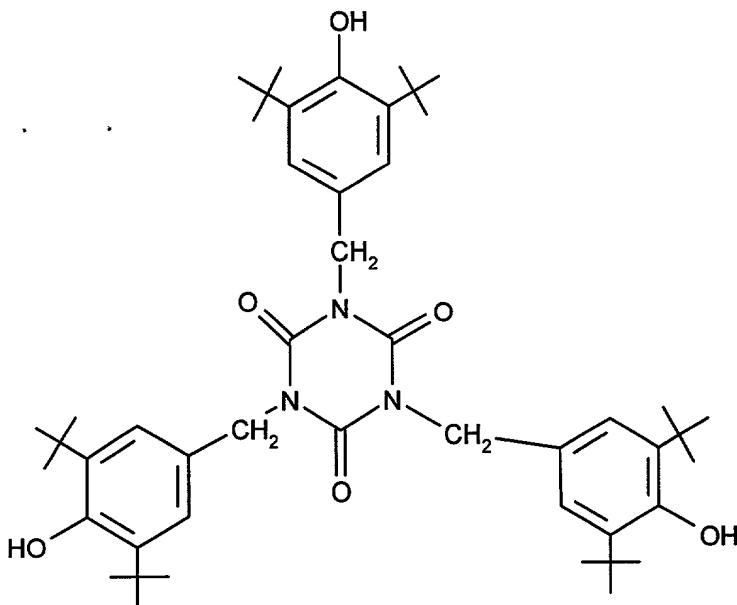
2,2'-ethyldene-bis-(4,6-di-tert-butylphenol);



thiodi-2,1-ethanediyl 3,5-bis(1,1-dimethylethyl)-4-hydroxyphenylpropanoate;



4,4',4''-[(2,4,6-trimethyl-1,3,5-phenyltrityl)tris (methylene)]tris[2,6-bis(1,1-dimethylethyl)-phenol];



1,3,5-tris[[3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl]methyl]-1,3,5-triazine-2,4,6(1H,3H,5H)-trione.

**28. (new)** Granules according to claim 21, which comprise as phosphonate dimethyl 2,5-di-tert-butyl-4-hydroxybenzyl-phosphonate, diethyl 3,5-di-tert-butyl-4-hydroxybenzylphosphonate, dioctadecyl 3,5-di-tert-butyl-4-hydroxybenzylphosphonate, dioctadecyl-5-tert-butyl-4-hydroxy-3-methylbenzyl-phosphonate and the calcium salt of 3,5-di-tert-butyl-4-hydroxybenzylphosphonic acid monoethyl ester.

**29. (new)** Granules according to claim 21, which comprise as phosphites or phosphonites triphenyl phosphite, diphenyl alkyl phosphites, phenyl dialkyl phosphites, tris(diphenylalkylphosphito)amines, tris(nonylphenyl) phosphite, trilauryl phosphite, trioctadecyl phosphite, distearyl pentaerythrityl diphosphite, tris(2,4-di-tert-butylphenyl) phosphite, bis(2,4-di-tert-butylphenyl) pentaerythrityl diphosphite, tristearyl sorbityl triphosphite, tetrakis(2,4-di-tert-butylphenyl) 4,4'-biphenylenediphosphonite, 3,9-bis(2,4-di-tert-butyl-4-methylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane, 3,9-tris(2,4,6-tris-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane, 2,4,6-tris-tert-butylphenyl 2-butyl-2-ethyl-1,3-propanediyl phosphite and 2,2'-ethylidenebis(4,6-di-tert-butylphenyl) fluorophosphite.

30. (new) Granules according to claim 21, prepared by a process which comprises heating

- a) a phenolic antioxidant, an organic phosphite or phosphonite, a phosphonate, a sterically hindered amine or a UV absorber, individually, or a mixture of these compounds, and
- b) at least one bisphenol A diglycidyl ether which is solid at room temperature,

to an extent such that at least 80% by weight of the bisphenol A diglycidyl ether has melted, pressing the melt through a plate provided with dies or perforations, the die or perforation diameter being between 1 and 10 mm, and chopping the resulting strands in the plastic state to form granules,

wherein the temperature before the outlet die (at the die head) is between 80-120° C.

PCT/EP2016/062862

**REMARKS**

Claims 1-20 are cancelled. Claims 21-30 are presented for consideration and are the only claims in this divisional application.

The specification is amended to make reference to the parent application.

New claim 21 finds support in original claims 1, 2-5 and 15-17. New claims 22-29 correspond to original claims 6-13. New claim 30 finds support on page 4 of the specification, second full paragraph, where specific extruder temperature ranges are outlined. No new matter is added.

Favorable consideration of the present claims is respectfully awaited.

Respectfully submitted,



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